

Growth patterns over two years after birth according to the birth weight and length percentile in children born preterm

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* No conflicts of interest to we solve

Purpose

This study aimed to analyze growth patterns during the first two years after birth according to the birth weight and length percentile in children born preterm, and to investigate factors affecting postnatal growth of these children.

Methods

Eighty-two preterm neonates with a gestational age below 37 weeks who followed up until 24 months of corrected age (CA) were retrospectively reviewed. Length, weight and head circumference were measured at birth, 6, 12, 18, and 24 months. Data were analyzed between children born small for gestational age (SGA) and those born appropriate for gestational age (AGA).

Result

Most preterm infants born SGA grew higher than -2 SDS in length during the first 6 months (Figure 1, Table 2). Compared to AGA group, SGA group had a low length SDS at 24 months of CA (-0.97 ± 1.06 vs -0.29 ± 1.12, P=0.01, Table 2). There was no significant difference in the rate of growth failure (length standard deviation score [SDS] <-2 at 24 months of CA) between SGA and AGA group (15.8 % vs 4.3%, P=0.13, Figure 1, Table 2). Multivariable logistic regression analysis showed that length below 10th percentile at birth (odds ratio [OR], 47.47; 95% CI, 2.02-1117.13, P=0.02, Table 3) and longer duration of in neonatal intensive care (NICU) (OR, 1.06; 95% CI, 1.01-1.11, P=0.02, Table 3) were associated with a decrease of length SDS (lower than -1) at 24 months of CA.

Conclusion

Whether SGA or not, most of preterm infants grow higher than -2 SDS during first 2 years. Birth length SDS and length velocity are one of the important factors affecting length SDS at 24 months of CA in children born SGA.

Table 2. Growth patterns of preterm infants during 24 months

	SGA (n=19)	AGA (n=63)	P-value
Length (SDS)			
6 month	-1.30 ± 1.71	-0.25 ± 1.14	0.04
12 month	-0.59 ± 1.27	-0.26 ± 1.95	0.51
18 month	-0.97 ± 1.39	-0.03 ± 1.29	0.02
24 month	-0.97 ± 1.06	-0.29 ± 1.12	0.01
Weight (SDS)			
6 month	-0.01 ± 0.02	0.01 ± 0.02	0.00
12 month	-0.63 ± 1.12	0.13 ± 1.03	0.01
18 month	-0.89 ± 1.09	0.04 ± 1.17	0.01
24 month	-0.87 ± 1.11	-0.09 ± 1.06	0.01
At 24 month			
Length SDS <-2	3 (15.8 %)	3 (4.3 %)	0.13
Length SDS <-1	8 (42.1 %)	12 (19.0 %)	0.07

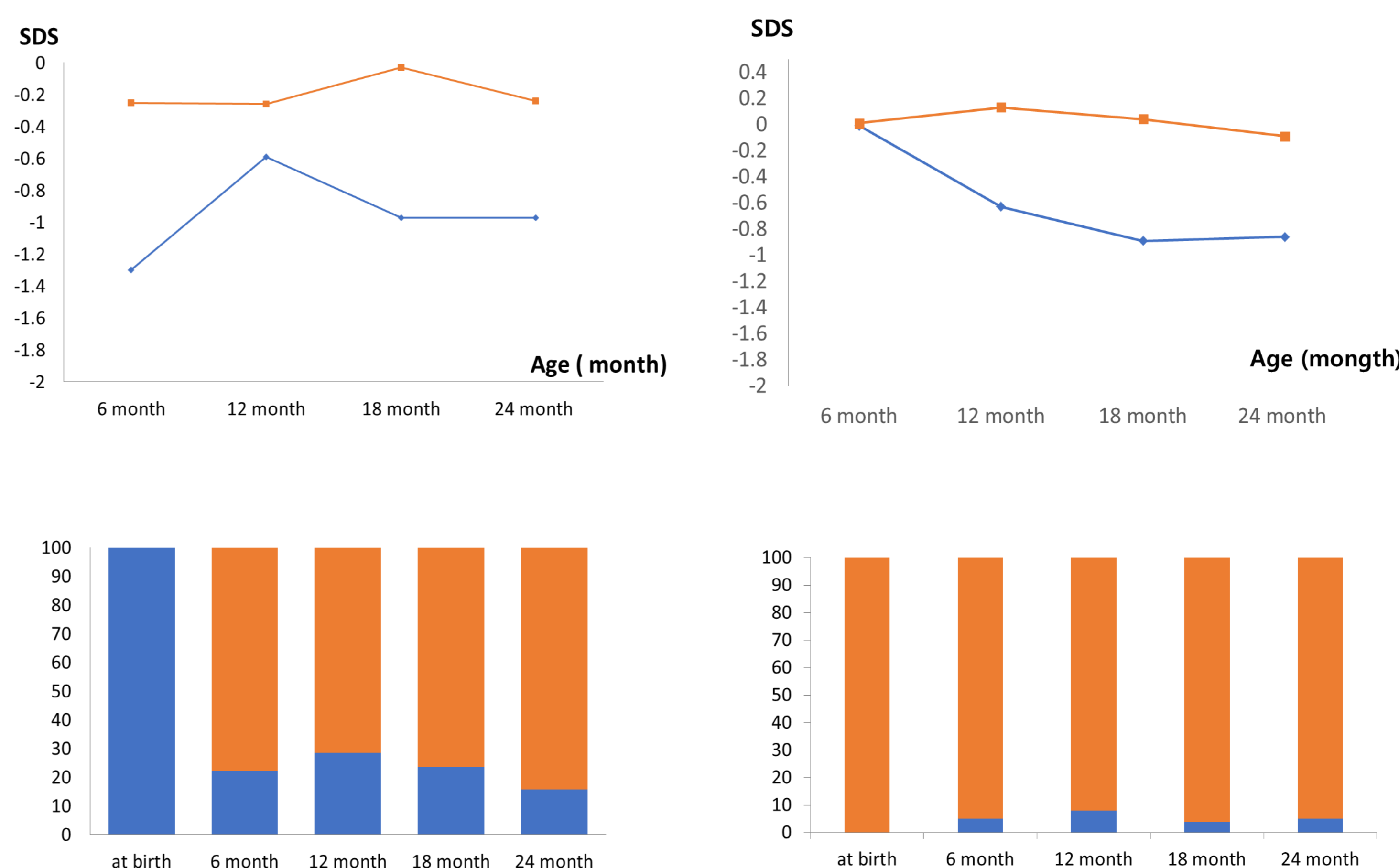


Figure 1. Growth patterns of preterm infants during 24 months A. Length patterns of SGA and no-SGA during 24 month, B. Weight patterns of SGA and no-SGA during 24 month, C. Percentage of Length SDS <-2 during 24 month after birth in SGA preterms, D. Percentage of Length SDS <-2 during 24 month after birth in AGA preterms

Table 3. A Multivariable Logistic Regression Model for Length of SDS at 24 month <-1

	Odds ratio	95% CI	P-value
Length < 10 th percentile at birth	47.47	2.02 – 1117.13	0.02
Weight < 10 th percentile at birth	2.12	0.29 – 16.55	0.45
Days in NICU	1.06	1.01 – 1.11	0.02
Length velocity (cm/yr)			
1 st year	0.65	0.45 – 0.95	0.02
2 nd year	0.51	0.32 – 0.83	0.01
Weight velocity (cm/yr)			
1 st year	0.98	0.40 – 2.42	0.98
2 nd year	0.84	0.24 – 0.95	0.78

Table 1. Clinical Data of 82 preterm infants

	SGA (n=19)	AGA (n=63)	P-value
Gestational age (weeks)	33.74 ± 2.70	31.71 ± 2.70	0.01
At birth			
Weight (kg)	1.52 ± 0.50	1.73 ± 0.51	0.12
Length (cm)	40.33 ± 5.32	43.27 ± 4.78	0.02
HC (cm)	28.49 ± 3.93	28.75 ± 3.07	0.76
BMI (kg/m ²)	9.16 ± 2.46	9.18 ± 1.69	0.96
VLBW	8 (42.1 %)	22 (34.9 %)	0.57
Csec	11 (73.3 %)	32 (62.7 %)	0.55
Apgar score			
1 minute	5.26 ± 2.38	5.26 ± 1.92	0.99
5 minute	7.05 ± 1.90	7.26 ± 1.48	0.62
DayNICU (days)	37.05 ± 26.75	48.38 ± 38.7	0.24

Abbreviations : CA, Corrected Age; SGA, Small for Gestational Age; AGA, Appropriate for Gestational Age ; SDS, Standard Deviation Score; HC, Head Circumference; BMI, Body Mass Index; HC, Head Circumference; VLBW , Very Low Birth Weight; Csec, Cesarean section